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CLIMATIC VARIATIONS AND MOTH FLIGHT AT BOZEMAN.*

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Bozeman is located in southwestern Montana, near the upper end of the Gallatin Valley, at an altitude of 4900 feet. It is surrounded by mountains but is east of the Continental Divide and is connected with the Great Plains region through the Missouri River. The valley bottom is irrigated, but a border of bench land along the foothills passes just east of the town, and forms during dry seasons a highway for the extension of typical species of the arid plains.

The mean annual temperature is 41° F., the annual rainfall is 18.7 inches and the length of the growing season averages 95 days. May is the month of maximum rainfall and about half of the total annual rainfall comes in May, June and July. There is a wide diurnal temperature range which averages about 28° F. in July with a mean daily minimum temperature for July of 48.4° F., making a large part of the night too cool for moth flight. The insect of the valley is Transitional in character, with a considerable admixture of Boreal elements.

A light trap was operated in Bozeman in 1919 by Mr. K. M. King, as a student, and all of the Lepidoptera caught were pinned and determined, chiefly by Barnes and McDunnough. Mr. King kept the records and the 1919 data should be credited to him. In 1923 a similar trap was operated by the writer in a more favorable location. With the exception of about 40 specimens identified by Dr. McDunnough, the material was determined by the writer. The discussion in this paper is limited to the family Noctuidae, as that group is caught in large numbers and is of great economic importance in Montana.

A comparison of these two records is very interesting as showing the variation in quantity and quality of the catch caused by climatic fluctuations. Some comparative climatic data for the entire period 1917-1923 are given in Table 1.

TABLE I. WEATHER CONDITIONS AT BOZEMAN

Year	Mean Temp. May to Aug., incl.	Dept. from Normal	Total Ppt. May-Aug.	Dept. from Normal
1917	58.5	-0.2	5.72	-3.35
1918	58.3	-0.4	8.03	-1.04
1919	65.3	+6.6	3.52	-5.55
1920	57.6	-1.1	9.17	+0.10
1921	59.8	+1.1	6.47	-2.60
1922	59.3	+0.6	9.80	+0.73
1923	58.4	-0.3	10.13	+1.06

The year 1919 was the driest of three consecutive dry summers and the warmest season of the period studied. On the other hand, 1923 is the second consecutive year to be wetter than normal, and represents a swing towards the opposite condition to 1919. A factor which operated to reduce the catches in 1923, but which does not appear in the above table, was a killing frost on September 9, 1921, followed by snow and a few days of cold weather. This unseasonable frost decimated the prairie species flying at that time over the entire state,

*—Contribution from the Montana Agricultural Experiment Station.

and the abundance of species flying at that time in 1923 is a measure of their ability to recover from a shock of that sort as well as to withstand the conditions of 1923.

The data are arranged in tables of subfamilies, giving the numbers of each species caught in the two seasons and their time of flight.

Before going into details, however, it might be well to present a summary of the catches of Noctuids by subfamilies, to show the relative importance of these groups in the Gallatin Valley.

TABLE II. SUMMARY OF LIGHT TRAP CATCHES

	1919		1923	
Subfamily	Number	Percent of Total	Number	Percent of Total
Agrotinae	1025	72.1	421	62.3
Hadeninae	133	9.4	184	27.2
Cuculliinae	33	2.3	12	1.8
Acronyctinae	213	15.0	43	6.3
Other subfamilies	16	1.2	17	2.4
TOTALS	1420	100.0	677	100.0

The subfamily Agrotinae is the dominant group of this fauna, followed by the Hadeninae and Acronyctinae; these three groups normally making over 95% of the total catch. In 1919 the Agrotinae and Acronyctinae far exceeded the Hadeninae, while with the wetter conditions of 1923 the Hadeninae have increased and the other two groups decreased, both in numbers and in relative strength.

In discussing the catches in detail the geographic distribution of the more abundant species is considered, and it was found advisable to use an abbreviated terminology in this connection. By "eastern" species we refer to the Alleghenian fauna of Merriam, while by "prairie" or "plains" species we mean those of the Campestrian fauna. "Mountain" and "Pacific slope" are self-explanatory.

TABLE III. CAPTURES OF AGROTINAE

Species	1919	1923	Flight Season
Heliothis phloxiphaga G. & R.	2	--	July - Aug.
Dasypoudea meadi Grt.	5	--	July
Schinia walsinghami Hy. Edw.	1	--	Aug.
Schinia separata Grt.	1	--	Aug.
Porosagrotis orthogonia Morr.	5	1	Aug. - Sept.
Euxoa quadridentata G. & R.	4	--	Sept.
" *ridingsiana* Get	25	--	Aug. - Sept.
" *pallipennis* Sm.	9	--	Aug. - Sept.
" *satiens* Sm	16	--	Aug.
" *intrita* Morr. *	358	78	July - Sept.
" *sponsa* Sm.	22	2	July - Aug.
" *messoria* Harr.	--	2	July
" *tessellata* Harr.	6	--	Aug. - Sept.
" *declarata* Wlk.	1	--	July
" *rena cervinea* Sm.	1	10	July - Aug.
" *divergens* Wlk.	23	100	July - Aug.
" *redimicula* Morr.	1	--	July
" *costata idahoensis* Grt.	17	2	July - Sept.
" *ochrogaster* Guen	10	--	July - Sept.
" *tristicula* Morr	--	3	July
" *brocha* Morr.	4	--	Sept.
Chorizagrotis auxiliaris Grt. **	48	2	Aug. - Sept.
Ch. thanatologia Dyar	1	--	Aug.
Rhizagrotis flavicollis Sm.	1	--	July
Feltia venerabilis arida Ckll.	--	1	July
" *ducens* Wlk.	384	121	Aug. - Sept.
" *herilis* Grt.	1	1	July
" *vancouverensis* Grt.	1	18	June - July

Agrotis plecta Linn.	--	2	July
" *oblata* Morr.	--	5	July - Aug.
" *unicolor* Wlk.	4	3	Aug. - Sept.
Onychagrotis rileyana Morr.	--	6	Sept.
Epipsilia littoralis Pack.	1	11	June - Aug.
Lycophotia nigra Sm.	--	1	Aug.
" *margaritosa* Harr	2	--	July
Ufeus hulsti Sm.	1	--	June
Anytus evelina French	--	5	Sept. - Oct.
Protagrotis niveivenosa Grt.	70	47	July - Aug.
TOTAL Genera	13	10	
Species	30	21	
Specimens	1025	421	

* All varieties included.
** Includes *introferens, agrestis* and *inconcinna.*

There are several points of interest in the above table. In the first place, the Heliothid group was entirely absent in 1923. Then there is a reduction in the genus Euxoa from 14 species and 497 specimens in 1919 to 7 species and 197 specimens in 1923. All of the major species of this genus decreased in numbers except *cervinea, divergens, messoria,* and *tristicula,* which are mountain or eastern forms requiring more moisture than the others. Of the species which decreased, all except *tessellata* and *sponsa* may be classed as forms of the arid plains which intruded into the fauna during the dry years, and are now reduced or absent. *Sponsa* was reared in 1923 from larvae found in the mountains at about 7000 ft. and hence is regarded as a mountain form.

Of the species from other genera showing a reduction *C. auxiliaris, F. ducens, A. unicolor* and *P. niveivenosa* are to be regarded as species of the Great Plains.

The other species showing a definite increase in 1923 are *F. vancouverensis, A. oblata, O. rileyana, E. littoralis* and *Anytus evelina.* All of these are to be regarded as normal inhabitants of this valley except *F. vancouverensis,* which is a recent intruder from the humid Pacific region.

To summarize, the plains species are decreasing, while mountain species and those from humid regions, either east or west, are increasing.

TABLE IV. CAPTURES OF HADENINAE

Species	1919	1923	Flight Season
Barathra configurata Wlk.	1	--	June
Scotogramma trifolii Rott.	--	2	June - July
" *mutata* Dod	5	--	July - Aug.
" *oregonica* Wlk.	--	28	July
Lasionycta perplexa Sm.	--	1	July
Polia lustralis Grt.	--	1	July
" *discalis* Grt.	--	1	August
" *imbrifera* Gn.	1	--	June
" *purpurissata* Grt.	--	1	July
" *cristifera* Wlk.	--	8	July - Aug.
" *meodana* Sm. **	5	24	July
" *atlantica* Grt.	2	43	July
" *radix* Wlk.	--	1	July
" *vicina* Grt.	--	1	July
" *doira* Stkr.	3	--	July - August
" *renigera* Steph.	5	8	July
" *stricta tenisca* Sm.	75	13	July - Sept.
" *lorea* Guen.	2	10	June - July
" *olivacea* Morr. *	6	10	July - Aug.
Tholera americana Sm. ***	1	--	Aug.
Eriopyga oviduca Guen.	--	1	June
" *melanopis* Hamp.	2	--	June
Nephelodes tertialis Sm.	17	6	Aug. - Sept.

Orthosia hibisci Guen.	--	1	May
Cirphis anteroclara Sm.	2	--	July
" *heterodoxa* Sm.	--	1	July
Neleucania rubripennis G. & R.	--	1	July
" *albilinea* Hbn.	2	20	Aug.
Leucania minorata Sm.	4	--	July
TOTALS Genera	9	8	
Species	16	21	
Specimens	133	184	

* Includes named varieties.
** Includes *P. liquida* Grt.
*** This may be an error, as the specimen cannot be located. It is possible, however, as *americana* is a prairie species.

In this subfamily we have an increase, both in numbers of species and specimens over 1919. The most striking examples are *S. oregonica*, *P. meodana*, *atlantica*, *lorea*, and *albilinea*. Of these, *oregonica* is Pacific, *meodana* Mountain, and the others eastern in distribution. The species showing large reduction are *mutata* and *tertialis*, plains forms, and *tenisca*, a mountain form. The increase in the number of species of Polia recorded is noteworthy.

In both this subfamily and the Agrotinae, there are several instances of captures of rather rare species in 1919 or 1923. This would tend to indicate that such species require conditions such as those particular years afforded and are held in check most of the time by climatic variations. Examples are the Heliothids, *Euxoa declarata*, *redimicula* and *cervinea*, *Chorizagrotis thanatologia*, *Agrotis plecta* and *oblata* and *Lycophotia nigra* among the Agrotinae; *Lasionycta perplexa* and several species of Polia among the Hadeninae, as well as many others

TABLE V. CAPTURES OF CUCULLIINAE

Species	1919	1923	Flight Season
Cucullia dorsalis Sm.	1	--	July
" *cinderella* Sm.	--	3	July
Oncocnemis sanina Sm.	1	--	Sept.
" *augustus* Harv.	6	--	Sept.
Pseudanarta caeca Dod.	2	--	July - Sept.
Brachylomia populi Stkr.	22	8	Aug. - Sept.
Eumichtis versuta Sm.	--	1	June
Xanthia lutea Sm.	1	--	August
TOTALS Genera	5	3	
Species	6	3	
Specimens	33	12	

This group has declined in numbers since 1919, but the species are all rather rare in this region and no definite conclusions can be drawn. *B. populi*, the only species caught in numbers, is a plains species, as are the two species of Oncocnemis.

TABLE VI. CAPTURES OF ACRONYCTINAE

Species	1919	1923	Flight Season
Septis lignicolora Guen.	--	2	July
" *alia* Guen.	--	1	July
Trachea montana Sm.	--	5	July
" *cinefacta* Grt.	1	--	July
" *cerivana* Sm.	--	1	July
" *indirecta* Grt.	6	3	July
Oligia violacea Grt.	1	--	July
" *transfrons* Neum.	--	3	Sept.
Agroperina lateritia Hufn.	1	2	July
" *cogitata* Sm.	1	--	July
" *pendina* Sm. *	2	9	July
Sidemia devastator Brace	51	12	Aug. - Sept.
Luperina passer Guen.	--	3	July
Caradrina extima Wlk.	140	--	July - Sept.

Platyperigea camina Sm.		2	--	July - Aug.
Proxenus miranda Grt.		1	--	July
Crambodes talidiformis Guen.		--	1	Aug.
Apamea senilis Sm.		5	--	Sept.
Gortyna medialis Sm.		1	1	Aug. - Sept.
Hypocoena rufostrigata Pack.		1	--	June
TOTALS	Genera	10	8	
	Species	13	12	
	Specimens	213	43	

* Includes *conradi, lineosa,* and *indela.* These four are almost impossible to separate.

The catch in this group shows a decided decrease in 1923. The exceptional species, *montana* and *pendina,* are both mountain forms, while those showing definite reduction, *devastator* and *extima,* are both prairie species. *Caradrina extima* was caught in large numbers in Havre in 1921 and in much smaller numbers in 1922, showing that conditions have been unfavorable for it throughout the state.

TABLE VII. CATCHES OF MINOR SUBFAMILIES

Species	1919	1923	Flight Season
Erastriinae			
Tarachidia tortricina Zell.	4	--	July - Aug.
Conacontia flavicosta Sm.	4	--	July
" *angustipennis* Grt.	--	6	July
Catocalinae			
Catocala verecunda Hulst.	2	--	Aug.
" *pura* Hulst.	3	--	July - Aug.
" *hermia* Hy. Edw.	--	3	Aug. - Sept.
Caenurgia erechtea Cram.	1	2	indefinite
Plusiinae			
Autographa californica Speyer	1	5	July
Erebinae			
Raphia coloradensis Put.	1	--	June
Hypeninae			
Hypena humuli Harr.	--	1	May
TOTALS Genera	6	5	
Species	7	5	
Specimens	16	17	

It is difficult to draw any conclusions from this table, as such small numbers of moths were captured.

GENERAL CONCLUSIONS.

Considering only the more abundant species, we may draw up the following table, dividing the species first into groups which are increasing and decreasing, then subdividing each group according to the general distribution of the various species. We have:

	Larger Catch in 1923	Larger Catch in 1919
Eastern Species	*E. divergens* *E. pectinata* *P. atlantica* " *renigera* " *lorea* " *olivacea* *N. albilinea*	None
Great Plains Species	None	*E. pallipennis* " *idahoensis* " *ochrogaster* *C. auxiliaris* " *agrestis* *F. ducens* *P. niveivenosa* *N. tertialis* *T. indirecta*

		S. devastator
		C. extima
Rocky	*E. cervinea*	*E. satiens*
Mountain	*P. meodana*	" *intrita*
Species	*A. pendina*	" *sponsa*
		P. tenisca
Pacific	*F. vancouverensis*	
Slope	*S. oregonica*	None
Species		

This table shows the prairie forms to be decreasing, the mountain forms to be holding their own, and eastern and Pacific intruders to be increasing.

The following general conclusion may be stated. The insect fauna of a given region is not a single stable unit, varying only in abundance from year to year, but is a composite of smaller groups, each of which has a more or less definite optimum. The composition of the fauna in a given season is very definitely related to the climatic conditions prevailing at the time of growth. Three dry years culminating in 1919 enormously increased the proportion of prairie elements in the Bozeman fauna, while reducing the eastern and mountain forms. The trend of the climate toward normal has resulted by 1923 in a great reduction in these prairie intruders, and the re-establishment of the eastern and mountain forms. How much farther this movement will go cannot be predicted, but it is certain that a return of dry weather will reverse the direction of the trend.

FOUR NEW SPECIES OF CARPHOBORUS (IPIDAE, COLEOPTERA.)*

BY J. M. SWAINE,
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Carphoborus blaisdelli new species.

Black ; vestiture minute, squamulose, inconspicuous. Length, 2. 3 mm. Relative measurements; pronotum, length 32, width 42; elytra, length 75, width 46. Closely allied to *simplex* Lec. *Head* (♂) with front convex, closely punctured, transversely impressed on the cephalic half, with a transversely flattened median tubercle between the eyes; antennal club larger than in *simplex*, as wide as long, sutures obliquely arcuate. *Pronotum* much as in *simplex*, sides nearly straight and parallel on caudal half, strongly constricted in front; disc shining, punctures moderate, rather close and deep; smooth median line subcarinate. *Elytra* with striae impressed, as wide as the closely punctured but shining convex interspaces; interspaces narrower and less convex on the sides, strial punctures coarse and dilated; basal margin and scutellar region with lunate rugae as usual. *Declivity* with *2nd interspace normal*; 1st, 3rd and 9th feebly elevated at apex; all interspaces convex, deeply punctured and shining, with a few, small, acute granules on the apex of the 1st, 3rd and 9th.

The female front between the eyes broadly plano-concave, the smooth and shining, subcircular, central area surrounded by a fringe of long yellow hair; the declivity with the alternate interspaces feebly granulate.

Holotype— ♂ , Camp Baldy, San Bernardino Co. Cal.; (R. Hopping, 17-7-14), No. 820 in the Canadian National Collection, Ottawa.

Allotype— ♀ , same data as holotype.

*—Contribution from the Division of Forest Insects, Entomological Branch, Dept. of Agriculture, Ottawa.

Paratypes—3 ♂, Pasadena, Cal. 1-3-23, Warwick Benedict, Col.; received from Dr. F. E. Blaisdell; one in Canadian National Collection, two in collection of Dr. Blaisdell.

Carphoborus dunni new species.

Allied to *bifurcus* Eichh. but larger, much more coarsely sculptured, with the sides behind and the declivity distinctly, acutely serrate. Piceous, the elytra reddish; length 2.3 mm. Relative measurements; pronotum, length 25, width 35; elytra, length 75, width 37.

The *Head* with the front convex, epistoma feebly impressed; granulate punctate; pubescence yellow, sparse, short, and stout (♀) antennal club small, oval, sutures nearly straight.

The *Pronotum* with the sides arcuate, constricted in front; smooth median line slightly carinate; disc coarsely and closely punctate, somewhat granulate, pubescence short, stout, not concealing the surface.

The *Elytra* coarsely punctate striate, striae impressed, as wide as the interspaces on the disc, much wider on the sides; strial punctures very coarse, dilated, very closely placed; interspaces granulate-punctate, clothed with sparse, very small, yellowish, scale-like hairs; the base of the elytra elevated, armed with lunate rugosities, acute and uniseriate towards the sides, numerous and confused on the base of the 2nd interspace which is also elevated and widened; alternate interspaces distinctly elevated and strongly, acutely though sparsely serrate on caudal half and on the sides; the *declivity* with the 3rd interspace widened, much more strongly elevated than the others, the prominent acute serrations in a confused double row; the 2nd interspace not serrate, very narrow, almost obsolete towards the apex; 1st and 2nd striae approximate, impressed and coarsely punctured.

The male has the epistoma broadly impressed, with two small tubercles on the median line between the eyes.

Holotype—♀, Nictor Lake, N. B., 8, vii, 21, M. B. Dunn, Red Spruce, No. 821 in the Canadian National Collection, Ottawa.

Allotype—♂, same labels.

Paratypes—Three specimens, same labels.

Carphoborus sansoni new species.

Allied to *carri* but stouter, sparsely pubescent and much more coarsely sculptured. Black, pronotum and elytra piceous, antennae, tarsi and pubescence yellow. Length 2.3 mm. Relative measurements; pronotum, length 27, width 37; elytra, length 71, width 40-43. The *Head* with epistoma transversely impressed; the front convex, transversely carinate between the eyes, feebly tuberculate at median line, granulate-punctate, pubescence close, short, stout, suberect and yellow.

The *Pronotum* feebly arcuate on the sides, constricted in front; moderately, densely, deeply punctured and feebly granulate; pubescence short, stout and erect; narrow median line smooth and feebly elevated.

The *Elytra* with the base elevated and rugose as usual, with the marginal rugosities subacute and with semblance of a double row on the disc; strongly punctate-striate, the striae deeply impressed, as wide as the interspaces on the disc, much wider on the sides; the strial punctures coarse, dilated and very close; the

interspaces coarsely granulate-punctate, clothed with minute, erect scales, not concealing the surface; the alternate interspaces wider, elevated, acutely serrate behind and on the sides. The *Declivity* with the 1st and 3rd interspaces wider and subequally, moderately elevated, acutely and rather strongly uniseriately serrate, 5th, 7th and 9th less elevated but strongly serrate behind; the 1st interspace with about 8 teeth on the declivital face; the 2nd interspace very narrow, obsolete towards the apex; the 1st and 2nd striae approximate and coarsely punctured.

Holotype— ♂, Banff, Alta., Sept. 1916, N. B. Sanson, White Spruce; No. 822 in the Canadian National Collection, Ottawa.

Carphoborus ponderosae new species.

Allied to *radiatae* Sw.; distinguished by the strongly elevated and serrate declivital interspaces. Length 2.5 mm. Relative measurements; pronotum, length 35, width 42; elytra, length 83, width 47. Pubescence on dorsal surface minute, erect, scale-like, fuscous, not concealing the surface. The *Head* with front (♀) closely, deeply punctured, broadly deeply excavated and rather densely clothed with yellow hair on the cephalic half; antennal club longer than wide, with sutures straight and tranverse.

The *Pronotum* one-fourth wider than long; widest at the base, sides arcuately narrowed on caudal half, feebly constricted in front; punctures deep, close, moderate; median line very narrow.

The *Elytra* with striae distinctly impressed and coarsely, closely punctured; interspaces hardly wider than the striae, convex, closely granulate-punctate; scales erect and minute, with strong, transverse, lunate rugae about the basal margin and on base of discal interspaces in the scutellar region.

The *Declivity* strongly punctured, the 1st and 3rd interspaces rather strongly carinate and closely armed with elongate acute teeth, the 3rd somewhat more strongly elevated and serrate; the 2nd interspace obsolete on the declivity. The space between the 1st and 3rd interspaces densely, coarsely punctured; 5th, 7th and 9th interspaces carinate and serrate towards the apex. The ventral surface coarsely punctured, the vestiture sparse and hair-like. The male front convex, densely punctured, transversely impressed on the epistoma, with a transversely flattened tubercle between the eyes, smaller than in *radiatae*, vestiture of minute scales; declivity with 1st and 3rd interspaces less strongly serrate; smooth median line on pronotum very narrow but distinct..

Holotype— ♀, Midday Valley, Meritt, B. C. 30-vi-1923, *Pinus ponderosae*, R. Hopping, 17110. Lot 1161; No. 823 in the Canadian National Collection, Ottawa.

Allotype— ♂, same labels.

Paratypes—5 ♂, 5 ♀, same labels; 52 additional specimens from same locality, all in Canadian National Collection, Ottawa.

PRODROMUS OF ANDRENA, A GENUS OF BEES

BY HENRY L. VIERECK,
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(Continued from page 81.)

Andrena (Andrena) lillooetensis n. sp.

Related to *A.* (*A.*) *washingtoni manitouensis* Viereck and Cockerell.

Male. Length 10 mm.; body black, mostly covered with more or less ochreous hair; temples produced, trapezoidal, almost reflexed but not angular, head covered with ochreous hairs except along the inner, outer and upper eye margin, and on most of the front where the hairs are black, clypeus nearly convex, partly planate, shining and distinctly punctured much like the face, clypearea wanting, sculpture of the clypeus not hidden by the moustache, labrarea with a broad rounded emargination, polished, joint 3 of antennae is to 4 as 10 is to 7, flagel undulate in outline, antennae blackish throughout, mandibles nearly typical, rather slender, extending beyond the outer edge of the labrum and nearly to end of the basal third of its fellow, lower edge at base with a rudimentary tooth, palpi nearly typical; thorax covered with an abundance of more or less pale ochreous hairs, dorsulum dullish, mesopleura with paler ochreous hairs throughout than the dorsulum, scutel hairy and sculptured like the dorsulum, metanotum hairy like the dorsulum, membrane uniformly tinged with brown, legs blackish brown excepting the small joints of the tarsi which are rather dark brownish, legs covered with pale ochreous or brownish hairs; propodeum with its enclosure poorly defined, with irregular rugae on basal half, finely reticulated on apical half, rounded off at apex, rest of upper face with pale ochreous hair, propodeal pleura not nearly hidden by the uniformly distributed pale ochreous hairs; abdomen with its tergum shining, almost polished, finely reticulated and indistinctly punctured, first tergite, with erect pale ochreous hairs, second and third tergites with pale erect or nearly erect hairs, seventh sternite of the *helvola* type, eighth sternite ending as in *manitouensis*, no appreciable hair bands on the tergum, hair at apex of abdomen of a golden hue; hypopygium of the *durangoensis* type but with the wide part of the process not attenuated as in that species.

Holotype— ♂, Lillooet, B. C., May 9, 1916, (E. M. Anderson); No. 771 in the Canadian National Collection, Ottawa.

Andrena (Andrena) nigrovaria new species.

Related to *A.* (*A.*) *fuscisignata* Viereck.

Female. Length 9 mm.; body black, mostly covered with white hairs; head covered with black and white hairs, greatest width of fovea equal to half the length of the ocellocular line, mostly filled with dark seal brown hairs, temples along the upper edge of the eye, face and cheeks along the eye margin with black hairs, clypeus and rest of face with a mixture of white and black hairs, face dullish, finely reticulate and closely punctured, clypeus slightly elevated above the apical margin, convex, sculptured much like the face except that the surface is shining and the punctures are more separated and better defined, clypearea present but poorly defined, clypeus thinly hairy its sculpture not at all hidden by hairs, labrarea broadly truncate, its corners rounded, labrum apparently without a median longitudinal crista between the labrarea and apical edge of labrum,

antennae blackish above, dark castaneous beneath, mandibles atypical, robust, palpi nearly typical; thorax covered with an abundance of white hairs that are apparently shorter on the dorsulum than the mostly whitish hairs on the mesopleura, mesopleura with some black hairs, scutel hairy and sculptured much like the dorsulum, legs blackish except for the small joints of the tarsi which are more or less reddish, covered with pale golden and white hairs, scopa typical, its hairs white, hairs at base above decidedly darkened, brownish, propodeum with its enclosure poorly defined, dullish and finely reticulated except at base where it is ribbed, rest of upper face of propodeum covered with finer white hair than on the mesopleura; abdomen with its tergum shining, second, third and fourth tergites with a thin apical whitish hair band that is interrupted in the middle of the second and third tergites, apical edge of first, second, third and fourth tergites with a stramineous border, pygidium slightly convex, with a planate border on each side, nearly pointed at apex, tergum with inconspicuous, pale nearly erect hairs in addition to the hair bands, fimbria partly whitish.

Holotype— ♀, Regina, Sask., Mortlach, May 31, 1909, (T. N. Willing No. 27); No. 755 in the Canadian National Collection, Ottawa.

Andrena (Andrena) nodosa n. sp.

Related to *A.* (*A.*) *pallida* Viereck.

Female. Length 12 mm.; body black, mostly covered with pale ochreous hairs; head covered with pale and black hairs; fovea filled with dark seal brown or blackish hairs, front and temples along the upper edge of the eye with black hairs, face dullish, its sculpture nearly hidden by the hairs, clypeus slightly elevated above the apical margin, convex, sculptured like the face except that the punctures are larger and well defined, clypearea present but poorly defined, clypeus densely hairy, its sculpture nearly hidden by hairs, labrarea rounded nodose at apex, labrum with a median longitudinal raised line between the labrarea and apical edge of labrum, antennae blackish throughout, mandibles typical, robust, palpi nearly typical; thorax covered with an abundance of pale ochreous hairs which are apparently shorter on the dorsulum than the ochreous and black hairs on the mesopleura, scutel hairy and sculptured much like the dorsulum, legs blackish except for the small joints of the tarsi which are more or less dark brown, covered with brownish golden and ochreous hairs, scopa typical, its hairs of the lower half pale ochreous, almost white, of its upper half with a brownish hue, hairs at base above decidedly darkened, blackish; propodeum with its enclosure poorly defined, dullish and finely reticulated except for basal rugae, rest of upper face of propodeum covered with finer pale ochreous and black hairs than mesopleura; abdomen with its tergum shining, the first to fourth tergites inclusive mostly with long erect ochreous hairs throughout, apical edge of first, second, third and fourth tergites with a stramineous border, second, third and fourth tergites laterally with some black hairs, pygidium nearly planate, on each side, nearly truncate at apex, fifth tergite with blackish hairs except at base, fimbria dark blackish brown.

Holotype— ♀, Banff, Alberta, May 29, 1911, (N. B. Sanson); No. 752 in the Canadian National Collection, Ottawa.

Andrena (Andrena) revelstokensis n. sp.

Related to *A.* (*A.*) *fulvicrista* Viereck.

Female. Length 12 mm.; body black, mostly covered with black hairs; head covered with black hairs except for the white hairs of the vertex and some whitish hairs on the face, fovea filled with dark seal brown hairs, face mostly shining, distinctly reticulate, with distinct punctures that are as many as three puncture widths apart, clypeus slightly elevated above the apical margin, convex, sculptured like the face except that the punctures are larger, better defined and more scattered, clypearea present but poorly defined, clypeus thinly hairy its sculpture not at all hidden by hairs, labrarea subemarginate, labrum, without a median longitudinal crista between the labrarea and apical edge of labrum, antennae blackish throughout, mandibles atypical, robust, palpi nearly typical; thorax covered with an abundance of white hair, mesopleura with black hairs except for some white hairs at the upper margin, tubercles with white hairs except for some black hairs, legs black, small joints of the tarsi more or less reddish, covered with brownish and blackish hairs, scopa nearly typical, its hairs black throughout; propodeum with its enclosure poorly defined, dullish and finely reticulated, rest of upper face of propodeum covered with white hair; abdomen with its tergum shining, without an apical whitish hair band, tergum with erect hairs that are white on the first, white down the middle of the second, black on the sides of the second and all over the remaining tergites, apical edge of first, second, third and fourth tergites with a translucent brownish border, pygidium convex, nearly pointed at apex, fimbria dark seal brown.

Holotype—♀, Revelstoke Mt., B. C., elevation 8,000 feet, August 12, 1923, (E. R. Buckell); No. 770 in the Canadian National Collection, Ottawa.

This may prove to be a variety of *A.* (*A.*) *fulvicrista* Viereck.

Andrena (Andrena) sladeni n. sp.

Related to *A.* (*A.*) *antonitonus* Viereck and Cockerell and looks like *A.* (*A.*) *nigrocaerulea* Cockerell.

Female. Length 10 mm.; body bluish to greenish, mostly covered with black hairs; head covered with black hairs except for the pale hairs of the vertex, fovea filled with dark seal brown hairs, face mostly polished and black, partly indistinctly reticulate, with distinct punctures that are as many as three puncture widths apart, front greenish, clypeus slightly elevated above the apical margin, convex, black, sculptured like the face except that the punctures are larger and sparser on the disc, clypearea present but poorly defined, clypeus thinly hairy its sculpture not at all hidden by hairs, labrarea subemarginate, decidedly narrowed toward the apex, labrum without a median longitudinal crista between the labrarea and apical edge of labrum, antennae blackish throughout, mandibles atypical, robust, palpi nearly typical; thorax above, including tubercles, covered with an abundance of whitish hairs that are shorter on the dorsulum than the black hairs on the mesopleura, scutel hairy and sculptured much like the dorsulum, legs blackish except for the small joints of the tarsi which are more or less dark brownish, covered with black or blackish brown hairs, scopa atypical, compact, its hairs blackish throughout; propodeum with its enclosure poorly defined, dullish and finely reticulated, wrinkled at base, rest of upper face of propodeum covered with

finer blackish hair than mesopleura; abdomen with its tergum shining, finely reticulated, indistinctly punctured, not appreciably fasciate, mostly covered with indistinct blackish hairs, apical edge of first, second, third and fourth tergites with a dark stramineous border, pygidium planate, without an embossed area, nearly pointed at apex, fimbria blackish.

Holotype—♀, Invermere, B. C., May 19, 1915, (F. W. L. Sladen); No. 767 in the Canadian National Collection, Ottawa.

Paratypes—14 ♀, with the same data as the holotype and Vernon, B. C., May 1, 1920, (R. C. Treherne); Penticton, B. C., May 30, 1919, (E. R. Buckell); Invermere, Sainfoin, May 17, June 1, 1915; Vasseau Lake, B. C., May 9, 1921, (F. W. L. Sladen); Fairview, B. C., May 18, 1919, (E. R. Buckell).

Andrena (Iomelissa) extensa n. sp.

Related to *A.* (*I.*) *lawrencei* Viereck and Cockerell.

Female. Length 11 mm.; body mostly black, abdomen greenish to bluish, mostly covered with black hairs; head covered with black hairs except for the pale ochreous hairs of the vertex, fovea filled with dark seal brown hairs, face distinctly reticulate, with distinct punctures that are as many as three puncture widths apart, clypeus convex, sculptured like the face except that the punctures are larger and sparser, clypearea wanting, clypeus thinly hairy its sculpture not at all hidden by hairs, labrarea right angularly emarginate, prominent, labrum without a median longitudinal crista between the labrarea and apical edge of labrum, antennae mostly blackish, flagel dark brownish beneath, mandibles atypical, robust, palpi nearly typical for *Iomelissa*; thorax above, including tubercles, with an abundance of ochreous almost reddish hairs that are shorter on the dorsulum than the black hairs on the mesopleura, dorsulum dullish, bluish, scutel hairy and sculptured much like the dorsulum, legs mostly blackish except for the small joints of the tarsi which are more or less brownish, covered with black or brownish hairs, scopa atypical, loose, a large percentage of its all black hairs apparently as long as the hind tibiae are wide, and branched; propodeum with its enclosure poorly defined, dullish and finely reticulated, somewhat wrinkled at base, rest of upper face of propodeum covered with fine pale ochreous hair; abdomen with its tergum shining, punctured, without apparent hair bands, first tergite basally with erect black hairs, apically with erect ochreous hairs, the remaining tergites mostly with shorter erect black hairs, apical edge of tergites broadly translucent brownish, pygidium nearly planate, slightly turned up on each side, nearly pointed at apex, reticulated, fimbria dark brownish.

Male. Length 10 mm.; body black or blackish, abdomen bluish, mostly covered with black hairs, temples rounded, head covered with black hairs except for the ochreous hair on the vertex, clypeus convex, more shining and more distinctly punctured than the face, clypearea wanting, sculpture of the clypeus nearly hidden by the moustache, labrarea with a broad rounded emargination, polished, joint 3 of antennae is to 4 as 11 is to 6, flagel, almost straight in outline, antennae black or blackish throughout, the flagel somewhat dark brownish beneath, mandibles nearly atypical, rather slender, extending barely beyond the outer edge of the labrum and nearly to end of the basal half of its fellow, palpi typical for *Iomelissa*; thorax above including tubercles, covered with an abundance of dark, ochreous

hairs, hairs of dorsulum seemingly shorter than the black hair of mesopleura, dorsulum dullish, mesopleura with black hairs throughout, scutel hairy and sculptured like the dorsulum, metanotum hairy like the dorsulum, membrane uniformly tinged with brown, legs blackish excepting the small joints of the tarsi which are rather dark brownish, legs covered with black or blackish hairs; propodeum with its enclosure poorly defined, almost entirely finely reticulated, rounded off at apex, rest of upper face with ochreous hair, propodeal pleura nearly hidden by the uniformly distributed black hairs; abdomen with its tergum shining, almost polished, finely reticulated and distinctly punctured, first and second tergites with erect pale ochreous hairs, the hair on the first tergite longer than on the second, apical margin of second and following tergites with short nearly erect black hairs, seventh sternite not so deeply emarginate as in *A.* (*A.*) *nigrihirta* Ashm., eighth sternite subemarginate at apex, abdomen not fasciate, hair at apex black, hypopygium of the *nigrihirta* type from which it differs especially in the not straight sided lingam which is wider at the lobes than the processes are wide at base, lobes somewhat pointed, apical two-thirds of process nearly parallel sided, and wider there than at base.

Holotype— ♀, Vernon, B. C., April 23, 1908, No. 768 in the Canadian National Collection, Ottawa.

Allotype— ♂, Chilcotin, B. C., May 12, 1920, (E. R. Buckell).

Paratypes—14 ♀, Okanagan Lake, B. C., April 23, 1914, (Tom Wilson); Salmon Arm, B. C., April 24, 1914, (Tom Wilson); Penticton, B. C., April, 8, May 10, 1919, (E. R. Buckell); Chilcotin, B. C., May 16, June 15, 1920, (E. R. Buckell); Oliver, B. C., May 1, 1923, (C. B. Garrett); Vernon, B. C., June 17, 1920, (N. L. Cutler); Fort Douglas, Utah, 5000 ft., May 5, 1918, *Balsamorrhiza sagittata*, (J. F. Brenckle), (O. A. Stevens No. 11885); Reno, Nevada, (F. H. Wickham); 6 ♂, Moscow, Idaho; Pullman, Washington, May 17, 1909, (W. M. Mann) and Fort Douglas, Utah, April 28, 1918, May, (J. F. Brenckle), (O. A. Stevens Nos. 11863, 11956); Penticton, B. C., April 30, 1919, (E. R. Buckell); Vernon, B. C., April 23, 1908.

In the ♂ paratypes the eighth sternite is truncate or slightly rounded at apex.

Andrena (Parandrena) gibberis n. sp.

Related to *A.* (*P.*) *andrenoides* Cresson.

Female. Length 9 mm.; body black, mostly covered with pale ochreous almost white to whitish hairs; head covered with whitish hairs, fovea filled with pale ochreous to whitish hairs, face nearly polished, with distinct punctures that are as many as three or more puncture widths apart, clypeus elevated above the apical margin to a point above the center, with a hunched appearance, convex, finely reticulate and with large, adjoining or nearly adjoining punctures, that are much larger than those of the face, clypearea present, polished, well-defined, clypeus thinly hairy, its sculpture not at all hidden by hairs, labrarea triangular, nearly pointed, labrum without a median longitudinal crista between the labrarea and apical edge of labrum, antennae blackish, scape almost yellowish to brownish beneath, mandibles typical, slender, palpi nearly typical; thorax covered with an abundance of pale ochreous and whitish hairs that are apparently shorter on

the dorsulum where they are darker than the whitish hairs on the mesopleura, dorsulum shining, finely sculptured and with sparse distinct punctures, scutel hairy and sculptured much like the dorsulum but partly polished, legs blackish except for the small joints of the tarsi which are more or less brownish, covered with pale ochreous and whitish hair, scopa atypical, compact, pale ochreous, almost white, hairs at base above darkened; propodeum with its enclosure poorly defined, dullish and finely reticulated, mostly finely wrinkled, rest of upper face of propodeum covered with ochreous hairs that are finer than those of the mesopleura; abdomen with its tergum shining, second, third and fourth tergites with an apical whitish hair band reminiscent of the conspicuous banding in some species of *Colletes*, apical edge of first, second, third and fourth tergites with a stramineous border, pygidium nearly planate, embossed down the middle, broadly rounded at apex, tergum with inconspicuous, appressed hairs in addition to the hair bands, fimbria pale ochreous.

Male. Length 7.5 mm.; body black mostly covered with whitish hair; temples produced, almost right angular, the angle apparently below the middle of eye, clypeus somewhat concave, yellowish white, with a black triangular mark on each side, not more distinctly punctured than the face, clypearea wanting, sculpture of the clypeus not hidden by the moustache, lateral face mark nearly an equilateral triangle and concolorous with the clypeus, labrarea triangular, polished, nearly nodose at apex where it is rounded, joint 3 of antennae is to 4 as 7 is to 4, flagel, almost straight in outline, antennae blackish, joint 4 and the following joints yellowish beneath, blackish above, mandibles nearly typical, very slender, extending beyond the outer edge of the labrum and apparently beyond the end of the basal third of their fellow, palpi nearly typical; thorax covered with whitish hairs, hairs of dorsulum seemingly shorter than hair of mesopleura, dorsulum partly nearly polished, finely sculptured and with widely separated punctures, scutel hairy like the dorsulum, polished, punctate, metanotum hairy like the dorsulum, membrane nearly colorless, legs blackish excepting the small joints of the tarsi which are more or less translucent brownish, legs covered with whitish hairs; propodeum with its enclosure poorly defined, with irregular transverse wrinkles on basal half, finely reticulated on apical half, rounded off at apex, rest of upper face with whitish hair, propodeal pleura with whitish hairs; abdomen with its tergum nearly polished, finely reticulated and indistinctly punctured, first and second tergites with longer erect whitish hairs than on the other tergites, third and following tergites with shorter erect or nearly erect sparse hairs, sixth sternite with its lateral apical corners reflexed outwardly, anal process slightly concave at apex, seventh sternite almost triangularly emarginate, sides of the second, third and fourth tergites with distinct whitish apical hair bands, hair at apex of abdomen whitish, pygidium slightly concave.

Holotype— ♀, Oliver, B. C., April 24, 1923, (C. B. Garrett); No. 757 in the Canadian National Collection, Ottawa.

Allotype— ♂, April 13, 1923, otherwise with the same data as the holotype.

Paratypes— ♀, April 23 and 24, otherwise with the same data as the holotype and May 19, 1919, from the type locality, (E. R. Buckell).

Andrena (Parandrena) garretti n. sp.

Related to *A.* (*P.*) *gibberis* Viereck.

Male. Length 9 mm.; body black, mostly covered with whitish hair; temples produced, almost right angular, the angle apparently below the middle of eye, head covered with whitish hairs, clypeus convex, more shining and more distinctly punctured than the face, yellowish except for a black oval mark on each side, clypearea wanting, sculpture of the clypeus not hidden by the moustache, labrarea broadly truncate almost subemarginate, polished, joint 3 of antennae is to 4 as 9 is to 4, flagel, almost straight in outline, antennae blackish, fourth and following joints yellowish beneath, blackish above, mandibles nearly typical, rather slender, extending beyond the outer edge of the labrum and nearly to end of the basal third of their fellow, palpi nearly typical; thorax covered with an abundance of whitish hairs, hairs of dorsulum seemingly shorter than hair of mesopleura, dorsulum dullish, sparsely, poorly punctured, mesopleura with whitish hairs throughout, scutel polished, indistinctly punctured, metanotum hairy like the dorsulum, membrance uniformly tinged with brown, legs blackish excepting the small joints of the tarsi which are rather dark brown, legs covered with whitish hairs; propodeum with its enclosure poorly defined, with irregular, weak rugae on basal third, mostly finely reticulated, rounded off at apex, rest of upper face with whitish hair, propodeal pleura not hidden by the uniformly distributed whitish hairs; abdomen with its tergum shining, first tergite almost polished, finely reticulated and indistinctly punctured, first and second tergites with longer erect whitish hairs than the succeeding tergites, angles of sixth sternite not as sharply reflexed as in *A.* (*P.*) *gibberis*, prominences of seventh sternite appearing obliquely truncate, eighth sternite paddle-like, expanded at apex, truncate, slightly emarginate, tergum with rather inconspicuous hairs that are supplemented on the sides of the second, third and fourth tergites by thin whitish apical hair bands, hair at apex of abdomen pale ochreous, enclosure of pygidium slender, truncate at apex.

Holotype—♂, Oliver, B. C., April 23, 1923, (C. B. Garrett); No. 758 in the Canadian National Collection, Ottawa.

Andrena (Parandrena) triangularis n. sp.

Related to *A.* (*P.*) *mendosa* Viereck.

Female. Length 9 mm.; body black, mostly covered with pale ochreous almost white hairs; head covered with pale ochreous hairs, fovea filled with pale ochreous hairs, face mostly polished, partly indistinctly reticulate, with distinct punctures that are as many as three or more puncture widths apart, clypeus slightly elevated above the apical margin, convex, sculptured like the face except that the punctures are larger and sparser, clypearea present, nearly polished but poorly defined, punctures on either side of clypearea scattered, clypeus thinly hairy, its sculpture not at all hidden by hairs, labrarea obtusely triangular, almost pointed at apex, labrum without a median longitudinal crista between the labrarea and apical edge of labrum, antennae blackish above, beneath most of the joints are coloured contrastingly with yellowish and dark brown, mandibles and palpi nearly typical; thorax covered with an abundance of pale ochreous hairs that are shorter on the dorsulum where they are darker than the almost whitish hairs

on the mesopleura, dorsulum dullish, finely reticulated, scutel hairy like dorsulum but polished, legs blackish except for the tarsi which are more or less brownish, covered with nearly whitish and pale ochreous hairs, scopa atypical, its hairs short and densely arranged almost as in *Plantandrena*, ochreous, hairs at base above darkened, propodeum with its enclosure poorly defined, dullish and finely reticulated, transversely wrinkled at base, rest of upper face of propodeum covered with finer pale ochreous hair than mesopleura; abdomen with its tergum shining, second, third and fourth tergites with an apical whitish hair band that is widely interrupted in the middle, apical edge of second, third and fourth tergites with a stramineous border, pygidium nearly planate, except for a narrow, median, longitudinal, acutely triangular embossed area, pygidium rounded at apex, tergum with inconspicuous, pale appressed hairs in addition to the incomplete hair bands, fimbria bright golden.

Holotype— ♀, Penticton, B. C., April 15, 1919, (E. R. Buckell); No. 756 in the Canadian National Collection, Ottawa.

NEW CANADIAN DOLICHOPODIDAE (DIPTERA).

Buffalo, N. Y.
BY M. C. VAN DUZEE,

Neurigona terminalis new species.

Male: Length 4.5-5 mm. Face, front and palpi covered with white pollen, the former narrow. Proboscis yellow with yellow hairs. Antennae yellow, third joint small, rounded; arista black, its first joint yellowish. Occiput gray with white pollen. Orbital cilia white.

Thorax wholly dull grayish brown, except the yellowish humeri and the pale yellow posterior edge of the pleura; scutellum yellow with a small black spot at base. Abdomen yellow with the base of the second to fifth segments broadly black, sometimes more than half black; hairs of the abdomen mostly black, those on the sides of third and fourth segments long and white. Hypopygium shining black with white hair, its small appendages a little yellowish; fifth segment with large black lobes on the venter.

Coxae pale yellow; anterior pair with yellow hair and bristles, middle ones with black hair, posterior pair with one black bristle. All femora, tibiae and tarsi yellow; fore tarsi with the last two, middle and hind ones with only the last joint black; first joint of all tarsi with a few very minute bristles, otherwise the tarsi have only short hair; joints of fore tarsi as 99-42-31-11-9; of middle ones as 112-42-26-14-8; those of hind tarsi as 61-66-35-20-11. Calypters, their cilia and the halteres pale yellow.

Wings slightly grayish; third vein bent backward at tip; last section of fourth vein bent near its middle, parallel with third towards the tip, ending in the apex of the wing; last section of fifth vein nearly three times as long as the cross-vein.

Female: Color of the head, thorax and abdomen about as in the male, except that the prothorax is yellow. Face nearly as wide as the front. Ovipositor yellow with a black tip. All tarsi yellow with the last joint black or brown, they are shorter than in the male; fore coxae with a few black hairs and bristles on apical half. All hairs on the abdomen black.

Described from three pairs taken at Keremeos, B. C., June 20-30, 1923, by C. B. Garrett. *Type* No. 454 in the Canadian National Collection.

Neurigona planipes new species.

Male: Length 5 mm. Face and palpi covered with silvery white pollen, the former narrow. Front and occiput with white pollen which conceals the ground color. Antennae pale yellow, third joint small; arista black. Orbital cilia white.

Thorax blackish, opaque with gray pollen; humeri and posterior edge of the pleura yellow; scutellum yellow with a black base. Abdomen yellow, extreme base of first segment and basal half or more of second to fourth segments black; fifth segment mostly yellow with large black lobes on the venter. Hypopygium and its appendages yellow, its upper portion a little infuscated.

Coxae, femora, tibiae and tarsi yellow, all fifth tarsal joints black. Middle tarsi with a few very minute bristles, otherwise all tarsi with only very short hair. Fore coxae with only yellow hair and bristles; middle ones with black hair and bristles. Middle trochanters with a shining black spot covering their anterior surface. Joints of fore tarsi as 62-37-19-8-8; of middle ones as 97-33-31-15-9; those of hind tarsi as 43-50-21-9-8. Calypters, their cilia and the halteres pale yellow.

Wings slightly grayish; third vein bent backward at tip; last section of fourth vein gently bent beyond its middle, parallel with third near the tip, ending in the apex of the wing.

Female: Two females taken at the same location as this male and agreeing with it in general color, except that the prothorax is yellow are no doubt the same species.

Described from one male and two females taken at Waterton, Alta, by H. L. Seamans, the male was taken July 8 and the females July 14 and 15. *Type* No. 455 in the Canadian National Collection.

The females are so nearly like those of *terminalis* that I cannot separate them. The males are very much alike but differ in the color of the hypopygium and in the length of the tarsal joints, especially those of middle and hind tarsi (the units given are fiftieths of a millimeter).

Neurigona cilimanus new species.

Male: Length 4.5 mm. Face very narrow, silvery white. Palpi and proboscis yellow, the former with silvery white pollen. Antennae yellow; third joint small, rounded, mostly brown. Orbital cilia white.

Thorax black, humeri and propleura yellow; scutellum brown above, yellow below; pleura back of the middle coxae wholly yellow, except a blackish spot in front of hind coxae. First abdominal segment yellowish brown above; second, third and fourth segments black above with their hind margins widely yellow; fifth yellowish brown with the narrow apical margin yellow; venter yellow. Hypopgium black, truncate at tip, a suture divides it into two nearly equal parts.

All coxae, femora and tibiae yellow; anterior surface of fore coxae with minute yellow hairs and a row of larger yellow hairs on outer edge, which become bristle-like near the tip; there is a yellow bristle above the fore coxae; hairs and bristles of middle and hind coxae black; hairs on the legs and feet wholly black;

the following is the proportionate length of the femora, tibiae, and the tarsal joints; anterior legs, femora 41, tibiae 53, tarsi 42-27-13-4-5; middle legs, femora 47, tibiae 83, tarsi 57-26-16-9-5; hind legs, femora 58, tibiae 98, tarsi 31-30-16-10-7; first three joints of fore tarsi yellow, fringed above with hairs, those of first joint not as long as those of second and third, longer than the thickness of the joints; fourth joint black, as long as wide; fifth also black, nearly orbicular and with several long hairs on its edge; middle tarsi mostly black, with minute bristles below; hind tarsi dark yellow, becoming brownish towards their tips. Calypters, their cilia and the halteres pale yellow.

Wings grayish; veins dark brown; third vein bent back at tip; last section of fourth vein very slightly bent near its middle, its tip not very close to the tip of third; last section of fifth vein nearly two and a half times as long as the cross-vein.

Described from one male taken at Aweme E., Man., June 18, 1921, (P. Vroom). *Type* No. 327 in the Canadian National Collection.

This is very much like *ciliata* V. D. in the formation of the hypopygium, and general color, it differs in having the fore tarsi yellow with the last two joints black, while in *ciliata* the fore tarsi are wholly black, in this form the first three joints of fore tarsi are fringed above with long hairs, while in *ciliata* they are fringed on each side with shorter hairs.

Medeterus trisetosus new species.

Male: Length 2.3 mm.; of female 3 mm. Face green. Front dark greenish, covered with brown pollen. First antennal joint reddish yellow; second and third joints blackish, small; lower orbital cilia pale.

Thorax nearly opaque with brown pollen; there are three black bristles above the fore coxae; scutellum with four marginal bristles. Abdomen shining black. Hypopygium black, moderately large, its appendages honey-yellow, they consist of two pair of organs and a central filament, one pair are long, curved and blunt at tip, the other pair are shorter, only a little curved, more blade-like, pointed, with a minute spine at tip. Legs and feet wholly black. Fore coxae with a row of long hair on outer anterior edge; joints of hind tarsi are as 23-35-19-9-8. Calypters and their cilia yellowish brown. Halteres brown.

Wings grayish, venation typical of the genus; last section of fifth vein and the cross-vein of about equal length.

Female: About as in the male. First antennal joint yellow; halteres yellowish. Calypters yellowish with a brown border. Ovipositor with black hair at its tip.

Described from one pair taken at Banff, Alta., the male taken June 14, and the female June 11, 1922, by C. B. D. Garrett.

Type No. 326 in the Canadian National Collection.

Hydrophorus claripennis new species.

Male: Length 4 mm. Face wide, narrower above, green with silvery white pollen, which is more abundant below the suture, which is placed just below the middle. Front opaque brown. Occiput with two postorbital bristles; the black orbital cilia descend to about the middle of the eye; beard white, not very long or abundant; cheeks very narrow. Antennae black.

Dorsum of thorax bronze brown; pleura green with white pollen; one large

black bristle on each side above the fore coxae; scutellum with four large marginal bristles. Abdomen green with white pollen which is thickest on the sides and at tip. Hypopygium mostly concealed.

Fore coxae blackish green with quite long white hair; middle and hind coxae black. Femora and tibiae green; fore femora thickened, they have a stripe of little spines on lower anterior surface, two of which near the tip are longer; fore tibiae with the usual comb of little bristles on inner surface reaching nearly their entire length. Middle tibiae with a row of stiff bristles on lower posterior edge. Hind femora with a row of bristles below, some of which are flattened and enlarged a little at tip. All tarsi brown. The joints of fore tarsi are as 33-15-12-10-10; those of middle pair as 49-24-19-14-13; joints of hind tarsi as 45-30-21-15-13. Calypters yellow with white cilia. Knobs of the halteres yellow with a small brown spot on outer surface.

Wings clear grayish, veins brown to the root of the wing.

Female: Face wider than in the male, its pollen yellowish, the ground color showing through on upper half. Fore femora with a single row of spines in place of the stripe of irregular ones found in the male. Knobs of the halteres wholly yellow. Joints of fore tarsi as 43-33-27-17-15; of middle pair as 50-26-22-16-15; and of hind ones as 45-35-25-17-14. Otherwise about as in the male.

Described from one pair taken at Aweme, Manitoba, Oct. 28, 1922, by N. Criddle; one female taken at the same place, July 14, 1922, by H. A. Robertson; and one female taken at Treesbank, Manitoba, Aug. 21, 1922, by H. A. Robertson. *Type*, No. 615 in the Canadian National Collection.

Hydrophorus ampullaceus new species.

Male: Length 3 mm. of wing 4.5 mm. Face quite wide near the middle, much narrowed above and less so below, making it somewhat bottle-shaped, opaque with silvery white pollen. Front opaque with brown pollen. Palpi yellowish. Beard white, short and sparse. Antennae black; third joint obtusely pointed at tip, longer than wide; arista basal, a little longer than the antenna. Cheeks of moderate width, not prominent.

Dorsum of thorax blackish, quite shining, with green reflections and brown pollen; one black bristle above each fore coxa; scutellum with four marginal bristles. Abdomen green, compressed at tip. Hypopygium concealed. Pleura and sides of the abdomen covered with white pollen.

Fore coxae, all femora and tibiae green. Hairs on all coxae white. Fore femora considerably thickened at base, tapering to near apical fourth, where they are a little bent, become slender and blackish, the last fourth being scarcely as thick as the tibia, they have a row of about nine black spines on lower anterior surface, which are shortest at base and only reach a little beyond the middle of the femora. Fore tibiae with a row of short, slender, erect bristles on the whole of their lower surface. Tarsi blackish; joints of fore tarsi as 31-15-14-9-10; of middle ones as 45-28-20-13-14; those of hind tarsi are as 43-32-23-14-13. Calypters yellow with white cilia. Halteres yellow with their knobs mostly blackish.

Wings clear grayish, without spots on the veins; venation normal; veins blackish to the root of the wing.

Described from one male taken at Banff, Alta., August 25, 1922, by C. B. D. Garrett. *Type*, No. 616 in the Canadian National Collection.

Diaphorus cylindricus new species.

Male: Length 3.5 mm. Face narrow, silvery white, appearing blackish in certain lights. Front shining green. Palpi yellow, about one third as long as the face, oval, half as wide as long, with a few pale hairs near the tip. Antennae black; third joint twice as long as wide, hollowed out below in outline, obtusely pointed at tip; arista inserted above the point. Lower orbital cilia white.

Thorax shining blue-green with a little pollen along the front edge and on the pleura. Abdomen rather long, not depressed, shining green, more coppery towards the tip; hairs on the dorsum black, those on the venter white. Hypopygium black, quite conspicuous, it has rather long black hairs, but no bristles at tip; its lamellae black, narrow, extending forward under the abdomen, nearly as long as the height of the hypopygium.

Fore coxae wholly yellow with yellow hair and black bristles; middle and hind coxae black on basal half, apical half yellow. All femora and tibiae yellow; hind femora slightly brownish at tip above; hind tibiae blackish at tip. Fore and middle tarsi black from the tip of the first joint; hind tarsi wholly black. Fore tibiae fringed on lower anterior edge with longer black hairs, which are not as long as their diameter, these little hairs extend along the first and second tarsal joints. Joints of fore tarsi as 25-11-8-7-7; those of middle tarsi as 34-14-10-6-7; those of hind ones as 25-20-15-9-8. Fore pulvilli scarcely enlarged. Calypters, their cilia and the halteres pale yellow.

Wings grayish; last section of fourth vein a little bent at its middle parallel with third beyond this bend; first vein reaches two fifths of the distance to the tip of the second vein; last section of fifth vein more than one and a half times as long as the cross-vein.

Female. Face wide, silvery white; palpi broad, darkened at base; fore tibiae and tarsi without longer hairs below. Otherwise about as in the male.

Described from 16 males and 6 females taken at Hull, Que., June 4, 1923, twenty two males and ten females taken at Mer Bleue, Ottawa, Ont., June 7th, 1923. All taken by C. H. Curran. *Holotype* and *Allotype* taken at Hull, Quebec, and No. 359 in the Canadian National Collection.

Dolichopus nigrilineatus new species.

Male : Length 3.5 mm. Face moderately narrow, silvery white. Front green, shining. Antennae wholly black; third joint scarcely as long as wide, rounded with a notch on upper edge where the arista is inserted. Lower orbital cilia whitish, about six of the upper cilia on each side black.

Thorax shining green; pleura duller with white pollen. Abdomen green with bronze reflections, only a very little white pollen on its sides, its hair black. Hypopygium black; its outer lamellae white, of moderate size, somewhat oval in outline, apical edge narrowly black, jagged and bristly, their surface has minute hairs which are inserted in brown dots.

Fore coxae largely black on outer surface, anterior surface mostly yellow with small black hairs; middle and hind coxae black with yellow tips. Fore femora yellow, blackened on upper edge; middle and hind pairs yellow, each with one preapical bristle; posterior pair narrowly blackish on upper edge, especially at tip, their hair black and short, without longer hair above or below. Tibiae yellow; tips of posterior pair a little enlarged and black for one fifth their length; fore

tibiae with two small bristles on lower posterior edge; middle ones with one large bristle on lower anterior edge near apical third. Fore and middle tarsi black from the tip of the first joint; joints of fore tarsi as 25-10-8-6-7; joints of middle pair as 41-18-14-9-8, the first joint of middle tarsi without a bristle above. Hind tarsi wholly black, their joints as 40-29-19-12 (last joint missing in the type), first joint with four large bristles. Calypters and halteres yellow, the former with black cilia.

Wings grayish; costa scarcely enlarged at tip of first vein; last section of fourth vein a little bent just before its middle; hind margin of wing not indented at tip of fifth vein; anal angle prominent, the wing being of nearly equal width.

Described from one male taken at Nordegg, Alberta, July 26, 1921, by J. McDunnough. Type No. 614, in the Canadian National Collection.

This is the only species with a black line on the upper edge of, and a black tip to hind femora running to group G. (Bulletin 116, U. S. National Museum, p. 17).

SOME SYNONYMICAL NOTES ON LEPIDOPTERA.*

BY J. McDUNNOUGH,
Ottawa, Ont.

In several of his papers in the "Archiv fur Naturgeschichte" Prof. E. Strand has described species of North American Lepidoptera as new. Recently, through the kindness of Dr. Walther Horn I have had the opportunity of examining the types of four of these species and find that all of Strand's names fall to earlier ones, as follows :

Parnara apostologica Strand, (1921, Archiv f. Naturg. LXXXVI, (1920), Abt. A, Heft 7, p. 160) falls to *Atrytonopsis locumni* Whitney. Photographs of the type were sent to Dr H Skinner and Mr. F. H. Benjamin and both concur in the synonymy.

Dysocnemis anartoides Strand, (1915, Archiv f. Natur. LXXX, (1914). Abt. A, Heft 11, p. 161) is the same as *belladonna* Hy. Edw.

Canarsiana discocellularis Strand, 1920, Archiv f. Naturg. LXXXV, (1919), Abt. A, Heft 12, p. 123) is a redescription of *Canarsia ulmiarrosorella* Clem. Strand has erected the new genus *Canarsiana* for the species on the ground that Hulst's original diagnosis of *Canarsia* gives vein 10 of primaries as separate and vein 8 of secondaries as separate from 7 ; this is obviously an error which was corrected by Ragonot and *Canarsiana* will fall to *Canarsia*, the type of both genera being the same species.

Framinghamia botys Strand, (op. cit., p. 160) falls to *Phlyctaenia helvalis* Wlk.; whether the new genus, *Framinghamia*, will hold I am not at the present time able to state ; the North American species at present listed under *Phlyctaenia* may not all be congeneric and a comparative study of the type of this latter genus (whatever it may be) and of *botys* Strand will be necessary to decide the point.

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*—Contribution from the Division of Systematic Entomology, Entomological Branch, Dept. of Agriculture, Ottawa.

FOUR APPARENTLY UNDESCRIBED DIPTERA FROM CANADA.*

BY C. HOWARD CURRAN,

Ottawa, Ont.

The four species of two-winged flies described in the following pages have come to hand during the past year. The types are all deposited in the Canadian National Collection.

Bibio lacteipennis n. sp.

Large black haired species, the legs red; wings cinereous whitish, the veins mostly sub-obsolete in both sexes.

Length of wing 9-10 mm. *Male.* Wholly shining black, with long black pile, rarely a few pale hairs on the mesonotum. Antennae and palpi blackish.

Legs reddish, shining, the coxae, trochanters, narrow base of the femora, the front ones often broadly below, knees narrowly, obscure apices of the tibiae the last three or four tarsal joints and the apex of the front basitarsi, black, the anterior tibiae usually brown on the anterior surface, sometimes chiefly brownish. Spines of the front tibiae red, with sparse setigerous punctures on the large moderately robust anterior one, the posterior spine one-third the length of the anterior. Front femora moderately swollen, with a posterior median depression; middle femora much smaller than the anterior, with similar depression, the posterior ones incrassate, their base slender, about 4 mm. in length. Pile on the legs all black, only the under surface of the anterior basitarsi with pale hair. Posterior basitarsi not swollen. Hind tibiae incrassate, larger than the femora.

Wings cinereous whitish, the small stigma and first three veins brown. Squamae greyish white, with black border and fringe. Halteres blackish.

Ninth tergite with a rounded V-shaped excision reaching nearly to the base.

Female. Hair short, black on the head, legs, and usually on the scutellum elsewhere yellowish. Front with a number of small setigerous tubercles on either side, the middle almost without roughening; a short carina above the antennae. Posterior femora more robust, shorter, only slightly over 3 mm., their tibiae not nearly as large.

Holotype and *Allotype*—♂, ♀, (in cop.), Mt. Revelstoke, B. C., 6000 ft., August 12, 1923, (P. N. Vroom); No. 714 in the Canadian National Collection, Ottawa.

Paratypes—26 ♂, 4 ♀, same locality and date, collected by P. N. Vroom and E. R. Buckell.

This is a very striking species and is the only one I know in which the legs are red and the wings with the veins mostly weak. Except for the color of the legs it is similar to *variabilis* Lw., but that species has the abdomen pale pilose.

Bibio lacteipennis nigrita n. var.

Male. Differs from the preceding in having the femora shining black, the hind ones obscurely reddish on the basal fourth.

Holotype—♂, Mt. Revelstoke, August 12, 1922, (E. R. Buckell); No. 715 in the Canadian National Collection, Ottawa.

Paratypes—2 ♂, same data.

The form is similar to *variabilis* but the abdominal pile is wholly black.

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*—Contribution from the Division of Systematic Entomology, Entomological Branch, Dept. of Agric., Ottawa.

Cyrtopogon platycauda n. sp.

Belongs in the group including *varans* Curr., *vulneratus* Mel. and *bigelowi* Curr. It is distinguished from *bigelowi* and *albovarans* by having the third antennal joint red, from *varans* in having the hair on the anterior tibiae and tarsi chiefly white and rather long; from *vulneratus* in the fifth segment being wholly shining black and not fulvous pollinose and pilose.

Length 11 mm. *Male*. Face gibbose, the swelling reaching to the base of the antennae, brassy yellowish pollinose, the mystax not dense, yellow, the mouth edge broadly black-haired, the hairs stouter; front black with similar, but not so abundant pollen as the face, and together with the upper part of the occiput, black-haired, the beard white, the occiput with slightly paler pollen than front. Palpi black, with black hair, the proboscis whitish haired. Antennae with the first two joints yellowish pollinose, the first black, second reddish, third orange red and longer than the first two, its thick style black.

Mesonotum black, with fulvous pollen, the usual areas paler but not extensive, a large lunulate spot on each posterior angle more than covering the postalar calli and broadly separated by the pollinose middle line which is slightly widened before the scutellum, shining black; pleura black, with slightly paler pollen than the mesonotum, a shining black area on the posterior lower edges of the mesopleura. Prothorax and pleura with pale hair, the mesopleura, mesonotum and scutellum with black hair, that on the first mentioned short, the last margined by about eight long, fine bristles, convex, its basal half greyish pollinose except laterally, elsewhere shining.

Femora and coxae black, the former greyish yellow pollinose, their pile pale. Tibiae and tarsi pale yellowish, the apical fifth of the former and apical half of the terminal tarsal joint brown or blackish. Femora and tibiae with pale yellowish or almost white hair, their bristles black; the hair on the hind tibiae however almost all black, only pale on the anterior surface; that below and behind the front tibiae conspicuously long, but not very abundant, becoming pure white at the apex, the bristles on the posterior surface yellowish; anterior tarsi with longish white hair on the posterior surface and on the anterior surface except on the basal joint, the anterior surface of the front tibiae and basitarsi bright yellow pubescent. Posterior four tarsi black haired, the middle basitarsi with white hair, their tarsal pads yellow, the posterior tibiae with yellow pubescence at apex on posterior surface.

Wings hyaline, their apical third tinged with greyish, the third vein branches beyond the end of the discal cell. Halteres yellow.

Abdomen shining black, the sides of the first, and the whole of the three following segments reddish yellow pollinose and clothed with similarly colored pile, except basal shining rectangles which leave only the broad hind margin pollinose; the apical four segments are beset with dense short black coarse pile which leaves the apical discal half of the fourth and fifth segments bare and polished and is sparse on the basal portion, there being a condensation across the middle although it is not as dense as on the sides and apical segments and is more recumbent; these segments are only slightly narrowed to the apex of the abdomen and are over twice as wide as high, the brownish genitalia also transverse, the fine hairs on the upper apex yellowish, the others black.

Holotype— ♂, Glen Souris, Man., June 5, 1923, (H. H. Robertson); No. 735 in the Canadian National Collection, Ottawa.

Criorhina maritima n. sp.

Allied to *C. intermedia* Johnson, but the third segment is reddish pilose, only the small anterior angles bearing brown hairs, the genitalia and a broad fascia between the wings brown pilose, the thorax and abdomen elsewhere with yellow pile.

Length 21 mm. *Male*. Face shining black; sides of face on upper half and posterior orbital margins yellow pilose, the vertical triangle, lower half of facial margins and cheeks with brownish pile, the frontal triangle with yellow hairs which become brownish on apical half. Ocellar triangle longer than wide. First antennal joint brown, second red, third missing.

Mesonotum yellow pollinose on the anterior fourth, the mesopleura with similar pollen. Middle half of dorsum black pilose; postalar calli and scutellum with pale yellow pile.

Legs black; apices of tibiae and the tarsal joints reddish, the last two or three joints brown, the posterior tarsi missing. Anterior femora with tawny red pubescence on the antero-ventral surface, abundant at the base. Femora with long black pile, the bases of the anterior four behind with pale hairs, the posterior ones with some pale hairs above. Tibiae with short black hair. Hind femora strongly thickened, moderately arcuate. Middle basitarsi with a row of ferruginous short spines on either edge below, several of these concentrated basally.

Veins broadly bordered with brownish,, so that the wings appear rather brownish.

Second abdominal segment yellowish pollinose,, the narrow middle line and apex somewhat darker, (thinly pollinose).

Holotype— ♂, Kentville, N. S., June 3, 1911; No. 722 in the Canadian National Collection, Ottawa.

The specimen described was received from Prof. W. H. Brittain of Truro, N. S., who kindly presented it to the Canadian National Collection.

Hemyda latipennis n. sp.

This species is very similar to *H. aurata* Desv. The chief differences are as follows : Shining frontal vitta less distinctly widened above and perhaps slightly wider; frontal bristles a little finer and shorter, sides of front paler yellow; face narrower, only slightly widened below, the parafacials not over two-thirds as wide; penultimate section of arista three times as long as wide (not only slightly longer), the arista a little stouter and with shorter pubescence.

Scattered hairs on sternopleura not so extensive and less numerous; with one or two sternopleurals, the front one weak or wanting. Wings conspicuously wider, the apical crossvein not nearly so oblique, the apex of the wing more obtuse, wings cinereous rather than brownish cinereous.

Each half of the fascia on third abdominal segment four or five times as long as wide, separated in the middle by more than its width.

Holotype— ♂, Aweme, Man., August 25, 1923, (R. M. White); No. 745 in the Canadian National Collection, Ottawa.

Paratype— ♂, Manitoba, (Wallis); in collection of Mr. J. B. Wallis.

The two species which I have seen are both easily recognized generically

by the shining black frontal vitta and elongate, sub-parallel-sided abdomen, the second segment with large, sub-apical, the third with smaller basal pale yellow spots. The short penultimate joint of the arista is characteristic of *H. aurata* and will serve to at once distinguish that species from *latipennis*.

A NEW SPECIES OF ATAXIA FROM THE UNITED STATES. (COLEOPTERA : CERAMBYCIDAE).

BY W. S. FISHER,

U. S. Bureau of Entomology.

In working over the material in the tribe Ataxiini in the United States National Museum, the following new species was found confused with specimens of the common *Ataxia crypta* Say in the collection.

Ataxia hubbardi new species.

Male. Elongate, parallel, castaneous to piceous, densely clothed with recumbent ochraceous and cinereous pubescence, which partially conceals the punctures, especially on the head and pronotum, and with rather short, semi-erect black setae arising from the punctures; beneath not quite as densely pubescent as above, the surface having a mottled appearance, and the semi-erect hairs longer and of a cinereous color.

Head coarsely and rather densely punctate, the front about as wide as long, feebly convex, and moderately concave between the antennal tubercles. Antennae as long as the entire body, and the joints distinctly annulated with a cinereous color at the base; first joint rather broadly fusiform, without a cicatrix at apex, and much shorter than the third joint; joints three and four subequal, and the following joints gradually decreasing in length. Pronotum slightly wider than long, the base and apex about equal in width; sides feebly arcuate, with a feeble obtuse tooth at middle; surface slightly uneven, and coarsely, rather densely, and irregularly punctate. Scutellum triangular, rounded behind, and densely pubescent. Elytra about four times as long as pronotum, and distinctly wider than it at base; humeri broadly rounded; sides nearly parallel to apical third, then feebly arcuately attenuate to the tips, which are separately narrowly rounded or subtruncate; surface regularly convex, with rows of coarse, deep, irregularly placed punctures, which are coarser and more confused at base and toward the sides, and becoming finer toward the apex. Prosternum feebly declivous in front, narrow between the anterior coxae, behind which it is broadly triangularly expanded. Mesosternum triangular between the middle coxae. Metasternum not deeply grooved at the middle, at most with only a narrow longitudinal impressed line. Abdomen beneath rather sparsely and irregularly punctate; last segment broadly rounded or subtruncate at apex. Femora nearly similar in shape on all legs, the posterior pair extending to the third abdominal segment. Tibiae narrow and subcylindrical; anterior and middle pairs straight, the former with a distinct sinus; posterior pair sometimes more or less arcuate and equal in length to the femora.

Female. Similar to the male, but differs from it in having the abdomen broader, the last segment more broadly truncate at the tip, and with a broad concave depression at the apex.

Length, 10-15 mm. ; width, 2.8-4.8 mm.

Type locality—Tucson, Arizona.

Other localities—Mesa, Arizona; Denton, San Diego, Victoria, Eagle Pass, Brownsville, Dallas, and Kerrville, Texas; Durant, Oklahoma; Lincoln, Nebraska; and Kansas.

Type, allotype and paratypes—Cat. No. 26852 U. S. Nat. Mus.

Described from a series of twenty-five specimens collected at the following localities. Type, allotype and one paratype collected at the type locality June 8 and May 10, 1897, in the stems of cocklebur (*Xanthium* sp.) by H. G. Hubbard; 2 paratypes at the same locality during April 1897, in the stems of sunflower (*Helianthus* sp.) by the same collector; 2 paratype from Mesa, Arizona, reared from larvae collected in the stems of sunflower (*Helianthus* sp.) by E. A. Schwarz, (Hopk. U. S. No. 9901s); 1 paratype collected at Denton, Texas, May 19, 1906, by F. C. Bishopp; 7 paratypes from Victoria, Texas, 3 reared from the stems of the western ragweed (*Ambrosia psilostachya*), April 5, 1905, by W. E. Hinds (Hunter No. 328), 3 reared from cocklebur (*Xanthium* sp.) March 30 and April 2, 1908, by J. D. Mitchell (Hunter No. 1514), and 1 reared from the stems of sunflower (*Helianthus* sp.) April 14, 1908, by J. D. Mitchell; 1 paratype from Kerrville, Texas, collected at light May 31, 1906, by F. C. Pratt; 1 paratype collected at San Diego, Texas, by Hubbard and Schwarz; 1 paratype from Eagle Pass, Texas, collected March 30, 1908, by Jones and Pratt; 1 paratype from Dallas, Texas, collected September 16, 1911, by F. C. Bishopp; 1 paratype from Brownsville, Texas, collected at light May 4, 1904, by H. S. Barber; 3 paratypes from Durant, Oklahoma, collected at trap light July 1, 1910, by S. W. Murphy (Hunter No. 2311); 1 paratype from Lincoln, Nebraska, collected at light during June, by L. Bruner; and 1 paratype labeled simply "Kansas, Snow."

This species is closely allied to *crypta* Say, with which it was confused in the collection. It differs from that species, however, in having the first joint of the antennae broadly fusiform, without a cicatrix at the apex, and the metasternum not deeply grooved at the middle. In *crypta* the first joint of the antennae is of the shape of an elongate reversed cone, with a distinct cicatrix at the apex, and the metasternum deeply and broadly longitudinally grooved at the middle. The species varies more or less in the coloration of the pubescence, the specimens from Texas have the white hairs more abundant, which gives the specimens a more cinereous color, but there are all stages of intergrades among the specimens examined. The posterior tibiae are also variable in shape, in some specimens they are more or less arcuate, while in others they are nearly straight.

Date of mailing, October 30th, 1924